

National Curriculum Links

All lesson plans link to the National Curriculum for Science in England, Wales, Northern Ireland and Scotland. Specific Curriculum Links are as follows:

- Sc 2 Life Processes and Living Things
- Science QCA Unit 3B Helping Plants Grow Well
 QCA Unit 5 B Lifecycles
- ICT QCA Unit 3D Exploring Simulations

Key Learning Objectives

By the end of this lesson children will learn that: Plants need healthy roots, leaves and stems to grow well. Plants need water, light and warmth for healthy growth. Computer simulations allow users to explore the effect of changing variables and use them to make and test predictions.

Differentiation

The lesson plan has been designed for use with mixed ability groups and most students should be able to respond well to the suggested activities, since much of the content involves student-centred, activity-based learning.

The Activity Sheet 2 can be used for more able, older children or as an extension to Activity Sheet 1.

Some Useful Websites

<http://www.food.gov.uk/healthiereating/>

<http://www.britishpotatoes.co.uk/>

<http://www.potatoesforschools.org.uk/>

<http://www.yearoffoodandfarming.org.uk>

<http://www.face-online.org.uk>

Lesson Plan – Growing Plants

Introduction (5 – 10 minutes)

Explain to the children that today they are going to be using their detection skills to figure out why a farmer's crop hasn't grown! Explain that they will be using a computer game where they have to solve the mystery of what factors might contribute to whether or not a plant grows healthily. Ask the children for ideas about what they think a plant needs to grow well and record these on a poster. (Depending on your access to computers, you may choose to look at the Potato Detective game as a class on the IWB then use an ICT suite to allow the children the opportunity to investigate the simulation themselves.)

The Potato Story

Activity (20 – 30 minutes)

Oversee the children as they investigate the case of the farmer's potato crop in the Potato Detective game. Spend time with each of the children and talk them through the questions. Stop the class and remind them to use the suggestions on the poster to help them understand what would be the best conditions for plant growth so they can answer the questions. Discuss with the class what the different conditions for the farmer's crop growth were. (Just enough light, warmth and water, high in nutrients and low in pests!)

In the classroom (10 to 20 minutes):

Use the Activity sheets 1 and 2 to extend the children's understanding of what plants need to develop into healthy plants.

At this stage, you may also want to give the children some background information about potato growing in the UK.

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- **In Great Britain we eat an average of 105 kg of potatoes per person, per year – which means that potatoes are in great demand right through the year.**
- **There are 3 main seasons when you can plant potatoes – the main times are January, April and September and it takes about 8 – 12 weeks for the potato seed to reach harvesting time – usually around when the plant is flowering.**
- **Not all potatoes are suitable for growing a crop of new potatoes from – you couldn't just use the odd looking potato that has fallen down the back of the cupboard! This is because there is a risk you will be planting a seed that may not be perfectly healthy and you may end up with a disappointing crop. You need to ensure you get specially grown seed potatoes to grow the tastiest crop. The main areas for growing potatoes in the UK are East Anglia, Lincolnshire and Yorkshire.**

Plenary

Go back to the poster that was made at the beginning of the lesson about what the children thought a plant needed to grow well. Have their ideas changed? Ask the children to share what they have learnt.

You could also take the children outside and show them some grass that has been covered or some that is in the shade. Get the children to describe what the grass looks like and suggest ideas as to why the grass is like that and what could be done to get it back to a 'healthy plant'.

The Potato Story

Here are some interesting facts about the potato to tell the children – that can be used in the quick quiz in the student section of this module.

- The world's biggest potato was grown in Germany and weighed 3.2kg – which is about the same weight as a healthy new born baby! (7.05lbs)
- We didn't always have potatoes in Britain – they were originally brought to Europe from Peru about 450 years ago by the Spanish. Potatoes had been grown in Peru for thousands of years.
- Chips are sometimes called French Fries because the French were the first to make potatoes into chips. Marie Antoinette of France wore potato flowers in her hair as decoration!
- A potato can be used as a battery to power a clock! (check out instructions on how to make and the science behind this at:

<http://www.kidzworld.com/article/4726-how-potato-batteries-work>

The potato contains around 80% water and 20% solids. An apple, onion and potato all have the same taste, it's just their strong scent that make them seem different! Hold your nose and take a bite – they all taste sweet! There are over 4,000 different varieties of potato grown around the world! 4 popular types of potato are the Charlotte, Estima, King Edward, and Maris Piper – the Maris Piper are great for making chips because they can be firm on the outside and floury in the middle.

Extension ideas:

VAK (Visual Auditory Kinesthetic) Opportunities

The right balance of light, warmth, water and pest control lends itself well to drama. The children could act out the different roles of the potato plant, the water etc and dramatise the effect that changing the variables on the plant has.

This subject can be made very real for the children by providing time to grow their own plants (for example using sunflower seeds or cress seeds) and changing the variables on these. Doing this would provide a great opportunity for experimental and investigative work – (Sc1) – where children can plan an investigation, decide on what makes the test fair and what evidence needs to be collected. They will also be able to observe first hand what affect changing the variables have on their plant. This would also be a good 'real life situation' to collect data in the form of how high the plant has grown and present it in a bar chart or graph. (Numeracy – Handling Data - Block C, Units 1 & 3)